

Notice of Allowability

Application No.

09/995,759

Applicant(s)

LARSSON, PETER

Examiner

Jean B. Corielus

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/8/06.
2. ☒ The allowed claim(s) is/are 2-8, 10-22, 24-30, renumbered as 1-27, respectively.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other abstract.


Jean B. Corielus
Primary Examiner
Art Unit: 2637

3-17-06

DETAILED ACTION

Drawings

1. The drawing objection has been withdrawn in view of the amendment and/or comment filed on 2/8/06.

Specification

2. The objection to the specification has been withdrawn in view of the applicant's comment filed on 2/8/06.

Claim Objections

3. The claim objection has been withdrawn in view of applicant's comment.
Filed on 2/8/06.

Double Patenting

4. The double patenting rejection has been withdrawn in view of the comment filed on 2/8/06.

Abstract

5. The previously filed abstract has been replaced by the attached new abstract sheet.

Allowable Subject Matter


5. The following is an examiner's statement of reasons for allowance: a method and apparatus are disclosed. The closest prior art Paulraj et al US patent No. 6,351,499 discloses similar method and apparatus. However, Paulraj does not teach or fairly the limitation recited in claim 2, lines 8-12 and similar limitations recited in the other base claims. Such limitations as recited in the claims, are neither anticipated nor rendered obvious by Paulraj et al.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Maxi-Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jean B Corrielus
Primary Examiner
Art Unit 2637
3-17-06

Abstract

A method and apparatus in a wireless communication system comprising at least one transmitter provided with at least two antennas and at least one receiving unit provided with at least one antenna and wherein training sequences are transmitted from the at least two antennas of the at least one transmitter to the at least one antenna of the at least one receiving unit. Characterized in that first, prior to the transmission, a training sequence $P(k)$ is Inverse Discrete Fourier Transformed to a sequence $p(n)$. Second, for each antenna branch the Inverse Discrete Fourier Transformed sequence $p(n)$ is cyclically rotated by a predetermined step, said predetermined step being different for each antenna branch to generate cyclically rotated training sequences $p(n-n_1)$, $p(n-n_2)$. Third, the cyclically rotated training sequences $p(n-n_1)$, $p(n-n_2)$ are transmitted concurrently from said at least two antennas to the receiving unit. Fourth, at the receiving unit receiving the cyclically rotated training sequences, the received sequences being a superposition of transmitted training sequences, each individually affected by the propagation medium, are used to provide channel impulse response estimates for the transmission from respective antenna.